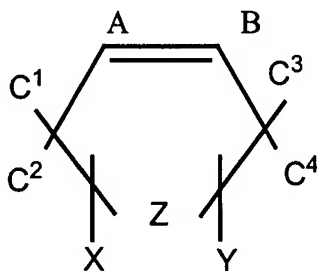


WE CLAIM

1. A film comprising at least one layer, the layer comprising an oxygen scavenger composition comprising a condensation polymer and a transition metal salt, compound or complex, wherein said polymer comprises mer units derived from

(A) at least one or a mixture of substituted alicyclic compounds having non-aromatic, ethylenic functionality according to the following representation:



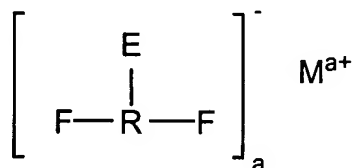
wherein

A, B, C¹, C², C³, C⁴ each independently represents hydrogen or a C_qH_{2q+1} hydrocarbyl group with q being an integer in the range of from 0 to 20, provided that either A or B and at least one of C¹, C², C³, C⁴ are hydrogen atoms and each carbon atom of the alicyclic ring is fully substituted by groups selected from hydrogen, hydrocarbyl X or Y groups or mixtures thereof to fill its valence state;

X and Y each independently or together represents functional groups that is capable of being part of a heteroatom containing linkage forming a covalent bond linkage between the cycloalkenyl containing group and other monomeric groups forming the condensation polymer; and

Z being selected from a -(C_tH_{2t-2}) hydrocarbyl group with t being an integer in the range from 1-4;

(B) at least one or a mixture of substituted non-aromatic or aromatic hydrocarbyl compounds having ionomeric functionality according to the following representation:



wherein

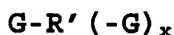
R represents a non-aromatic or aromatic hydrocarbon group;
 each F independently or two F groups together represent a functional group capable of being part of a heteroatom containing linkage between the hydrocarbon group R and other monomeric groups forming the condensation polymer;

E represents an anionic group selected from sulfonyl or carboxyl group;

M represents a cationic alkali metal ion or cationic alkaline earth metal ion; and

“a” represents an integer having the value equal to the numerical value of the valence of M; and

(C) at least one or a mixture of di- or polyfunctional hydrocarbon compounds according to the following representation:



wherein

R' represents a non-aromatic or aromatic hydrocarbon group; and
 each G independently represents a functional group capable of being part of a heteroatom containing linkage between the hydrocarbon group R' and the other monomeric groups forming the condensation polymer, and x is at least 1.

2. The film of claim 1 wherein (A) comprises a monomer selected from 3-cyclohexene-1,1- dimethanol, tetrahydrophthalic acid, dimethyl tetrahydrophthalate, tetrahydrophthalic anhydride, and mixtures thereof.

5

3. The film of claim 1 wherein (B) is selected from dimethyl-5-sulfoisophthalate, alkali metal salt or 5-sulfoisophthalic acid, alkali metal salt.

10

4. The film of claim 1 wherein (C) is selected from aliphatic or aromatic diacids, diols, diamines, diisocyanates or polyols selected from C₂-C₂₀ alkylene glycol or polyalkylene glycol.

15 5. The film of claim 1 wherein the functional groups of each of the monomers (A), (B) and (C) are selected from carboxylic acid, acid ester, acid anhydride, acid halide, isocyano, hydroxyl or amino groups; said groups are present in a molar ratio of carboxylic acid, acid ester, acid anhydride, acid halide and isocyano groups to hydroxyl and amino groups of from 0.9:1 to 1.1:1; and said mer units derived from (B) are present in from 0.25 to 20 molar percent of said codensation polymer.

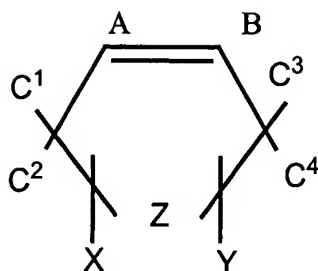
20

6. A laminated product comprising a plurality of layers, including
i) at least one layer, the layer comprising an oxygen scavenger composition comprising a condensation polymer and a transition metal salt, compound or complex, wherein said polymer comprises mer units derived from

25

(A) at least one or a mixture of substituted alicyclic compounds having non-aromatic, ethylenic functionality according to the following representation:

30



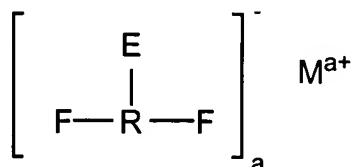
wherein

A, B, C¹, C², C³, C⁴ each independently represents hydrogen or a C_qH_{2q+1} hydrocarbyl group with q being an integer in the range of from 0 to 20, provided that either A or B and at least one of C¹, C², C³, C⁴ are hydrogen atoms and each carbon atom of the alicyclic ring is fully substituted by groups selected from hydrogen, hydrocarbyl X or Y groups or mixtures thereof;

X and Y each independently or together represents functional groups that is capable of being part of a heteroatom containing linkage forming a covalent bond linkage between the cycloalkenyl containing group and other monomeric groups forming the condensation polymer; and

Z being selected from a -(C_tH_{2t-2}) hydrocarbyl group with t being an integer in the range from 1-4;

(B) at least one or a mixture of substituted non-aromatic or aromatic hydrocarbyl compounds having ionomeric functionality according to the following representation:



wherein

R represents a non-aromatic or aromatic hydrocarbon group;
each F independently or two F groups together represent a functional group capable of being part of a heteroatom containing linkage between the hydrocarbon group R and other monomeric groups forming the condensation polymer;

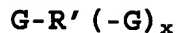
E represents an anionic group selected from sulfonyl or carboxyl group;

M represents a cationic alkali metal ion or cationic alkaline earth metal ion; and

5 “a” represents an integer having the value equal to the numerical value of the valence of M; and

(C) at least one or a mixture of di- or polyfunctional hydrocarbon compounds according to the following representation:

10



wherein

R' represents a non-aromatic or aromatic hydrocarbon group; and

15 each G independently represents a functional group capable of being part of a heteroatom containing linkage between the hydrocarbon group R' and the other monomeric groups forming the condensation polymer, and x is at least 1; and

ii) at least one layer comprising a material selected from the group consisting of

- 20 a) a polymeric article,
 b) a paper article, and
 c) a metal article.

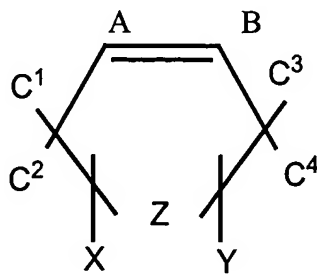
7. The laminated product of claim 6 wherein (A) comprises a monomer
25 selected from 3-cyclohexene-1,1- dimethanol, tetrahydrophthalic acid, dimethyl tetrahydrophthalate, tetrahydrophthalic anhydride, and mixtures thereof.

8. The laminated product of claim 6 wherein (B) is selected from dimethyl-5-sulfoisophthalate, alkali metal salt or 5-sulfoisophthalic acid, alkali metal salt.

5 9. The laminated product of claim 6 wherein (C) is selected from aliphatic or aromatic diacids, diols, diamines, diisocyanates or polyols selected from C₂-C₂₀ alkylene glycol or polyalkylene glycol.

10 10. The laminated product of claim 6 wherein the functional groups of each of the monomers (A), (B) and (C) are selected from carboxylic acid, acid ester, acid anhydride, acid halide, isocyno, hydroxyl or amino groups; said groups are present in a molar ratio of carboxylic acid, acid ester, acid anhydride, acid halide and isocyno groups to hydroxyl and amino groups of from 0.9:1 to 1.1:1; and said mer units derived from (B) are present in
15 from 0.25 to 20 molar percent of said codensation polymer.

11. An oxygen scavenger composition comprising a condensation polymer and a transition metal salt, compound or complex, wherein said polymer comprises mer units derived from
20 (A) at least one or a mixture of substituted alicyclic compounds having non-aromatic, ethylenic functionality according to the following representation:



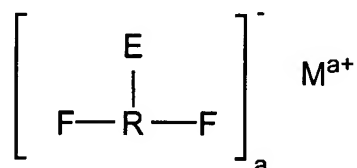
25 wherein

A, B, C¹, C², C³, C⁴ each independently represents hydrogen or a C_qH_{2q+1} hydrocarbyl group with q being an integer in the range of from 0 to 20, provided that either A or B and at least one of C¹, C², C³, C⁴ are hydrogen atoms and each carbon atom of the alicyclic ring is fully substituted by groups selected from hydrogen, hydrocarbyl X or Y groups or mixtures thereof;

X and Y each independently or together represents functional groups that is capable of being part of a heteroatom containing linkage forming a covalent bond linkage between the cycloalkenyl containing group and other monomeric groups forming the condensation polymer; and

Z being selected from a -(C_tH_{2t-2}) hydrocarbyl group with t being an integer in the range from 1-4;

(B) at least one or a mixture of substituted non-aromatic or aromatic hydrocarbyl compounds having ionomeric functionality according to the following representation:



wherein

R represents a non-aromatic or aromatic hydrocarbon group;

each F independently or two F groups together represent a functional group capable of being part of a heteroatom containing linkage between the hydrocarbon group R and other monomeric groups forming the condensation polymer;

E represents an anionic group selected from sulfonyl or carboxyl group;

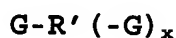
M represents a cationic alkali metal ion or cationic alkaline earth metal ion; and

“a” represents an integer having the value equal to the numerical

value of the valence of M; and

(C) at least one or a mixture of di- or polyfunctional hydrocarbon compounds according to the following representation:

5



wherein

R' represents a non-aromatic or aromatic hydrocarbon group; and

10

each G independently represents a functional group capable of being part of a heteroatom containing linkage between the hydrocarbon group R' and the other monomeric groups forming the condensation polymer, and x is at least 1.

15

12. The composition of claim 11 wherein said condensation polymer comprises from 40 to 60 molar percent (A), from 0.25 to 20 molar percent (B), and from 40 to 60 molar percent (C).

20

13. The composition of claim 11 wherein functional groups X, Y, F, and G are each independently selected from the group consisting of $-(\text{CH}_2)_n-$ OH, $-(\text{CH}_2)_n-\text{NH}_2$, $-(\text{CH}_2)_n-\text{N}=\text{C}=\text{O}$ and $-(\text{CH}_2)_n-\text{C}=\text{O})-\text{D}$ with n being an integer in the range from 0 to 20 and D being selected from a halide atom or an OR group wherein R is an -H or C_1 - C_{12} alkyl group, or X and Y together, two F groups together or two G groups together represent $-((\text{CH}_2)_n-\text{C}=\text{O})_x-\text{D}$ with n being an integer in the range from 0 to 20, D is oxygen atom and x is 2.

25

30

14. The composition of claim 11 wherein (A), (B) and (C) have functional groups such that the molar ratio of hydroxyl and amino functional groups to carboxylic acid, carboxylic acid ester, carboxylic acid halide and isocyano functional groups is from 0.9:1 to 1.1:1.

15. The composition of claim 11 wherein (A) comprises alicyclic units selected from substituted cyclohexene; and Z being $-(C_tH_{2t-2})$ with t being 1.

5

16. The composition of claim 11 wherein (A) comprises a monomer selected from 3-cyclohexene-1,1-dimethanol, tetrahydrophthalic acid, dimethyl tetrahydrophthalate, tetrahydrophthalic anhydride, and mixtures thereof.

10

17. The composition of claim 11 wherein (B) is selected from dimethyl-5-sulfoisophthalate, alkali metal salt or 5-sulfoisophthalic acid, alkali metal salt.

15

18. The composition of claim 11 wherein (C) is selected from aliphatic or aromatic diacids, diols, diamines, diisocyanates or polyols selected from C_2 - C_{20} alkylene glycol or polyalkylene glycol.

20

19. The composition of claim 11 wherein (C) is selected from C_2 - C_{20} alkylene glycol, C_4 - C_8 alkylene glycol, poly(C_2 - C_4 alkylene) glycol, and 3-cyclohexene-1,1-dimethanol.

25

20. The composition of claim 11 wherein the transition metal salt is selected from the group consisting of cobalt neodecanoate, cobalt 2-ethylhexanoate, cobalt oleate, cobalt acetylacetonate, and cobalt 2-ethylbutyrate.

30

21. The composition of claim 11 wherein the composition comprises an effective amount of a photoinitiator.

22. The composition of claim 11 wherein the composition comprises a diluent polymer selected from the group consisting of polyester, polyamides, polycarbonates, polyurethanes and polyethers, ethylene polymers or copolymers, acrylate polymers, ethylene-vinyl alcohol copolymer, polypropylene and polypropylene copolymers, styrene polymers and styrene copolymers, vinyl chloride polymer and vinyl chloride copolymers, polyvinylidene polymers and copolymers and mixtures thereof.

10